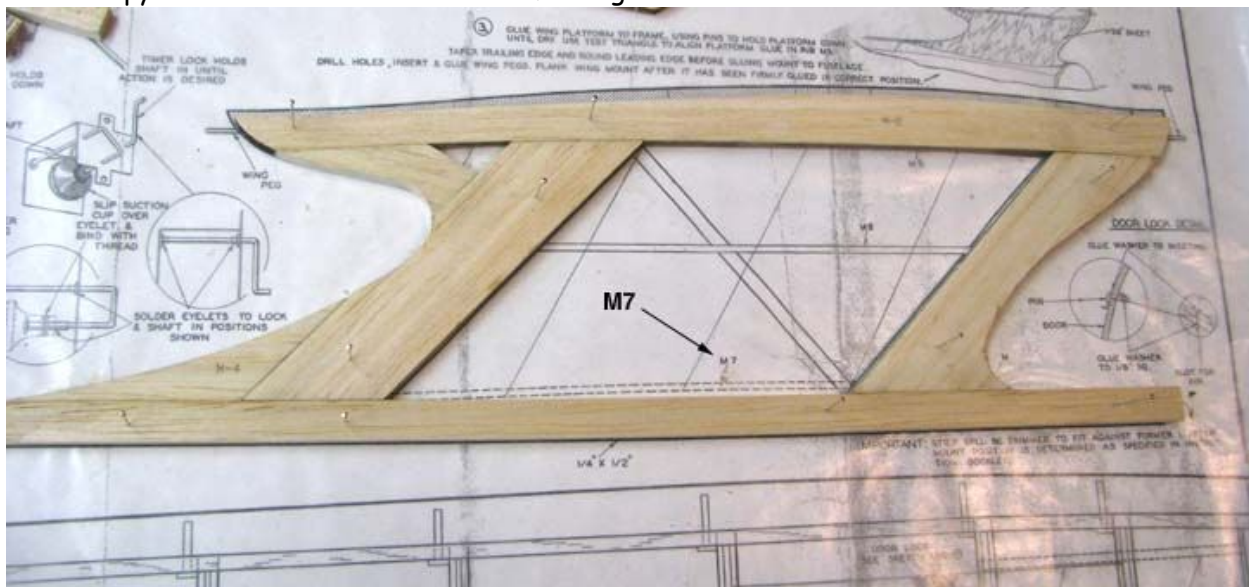


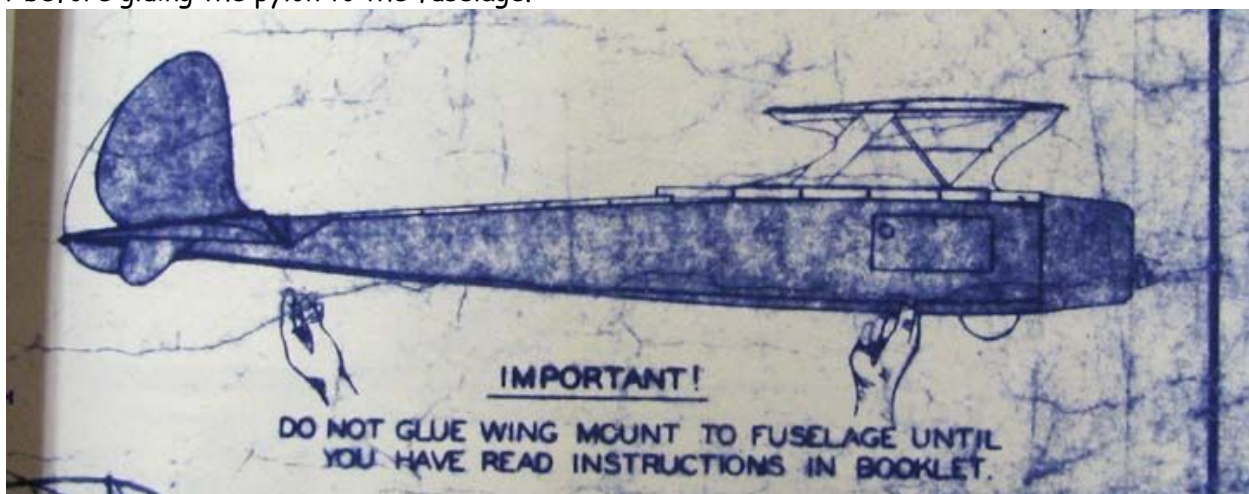
From: ["Tandy C. Walker" <tandyw@flash.net>](mailto:tandyw@flash.net)
 To: ["Walker, Tandy C." <tandyw@flash.net>](mailto:tandyw@flash.net)
 Date: 2/14/2009 3:49:53 PM
 Subject: 43 Sailplane Balance Point and Pylon Location

I started construction of the pylon on Thursday evening, February the 12th and discovered a lack of information on how to locate the pylon on the fuselage, which in turn lead to the fact that the center of gravity was also undefined. So the past several days I have been working trying to resolve these issue. Even though this is quite long and drawn out, I think it is instructive to document what I have found out and give credit to those who provided the critical assistance.

I laid up the 1/4" frame of the Sailplane pylon Thursday evening as shown below. The doublers will be added to the frame after it take up from the plan. Notice that the plan for the pylon is intentionally shown away or removed from the fuselage structure so the builder must follow the instructions on how and where to position it on the fuselage. Note the pylon rib (M7) shown in phantom below, which is not to be glued on the frame until the pylon has been attached to the fuselage structure.



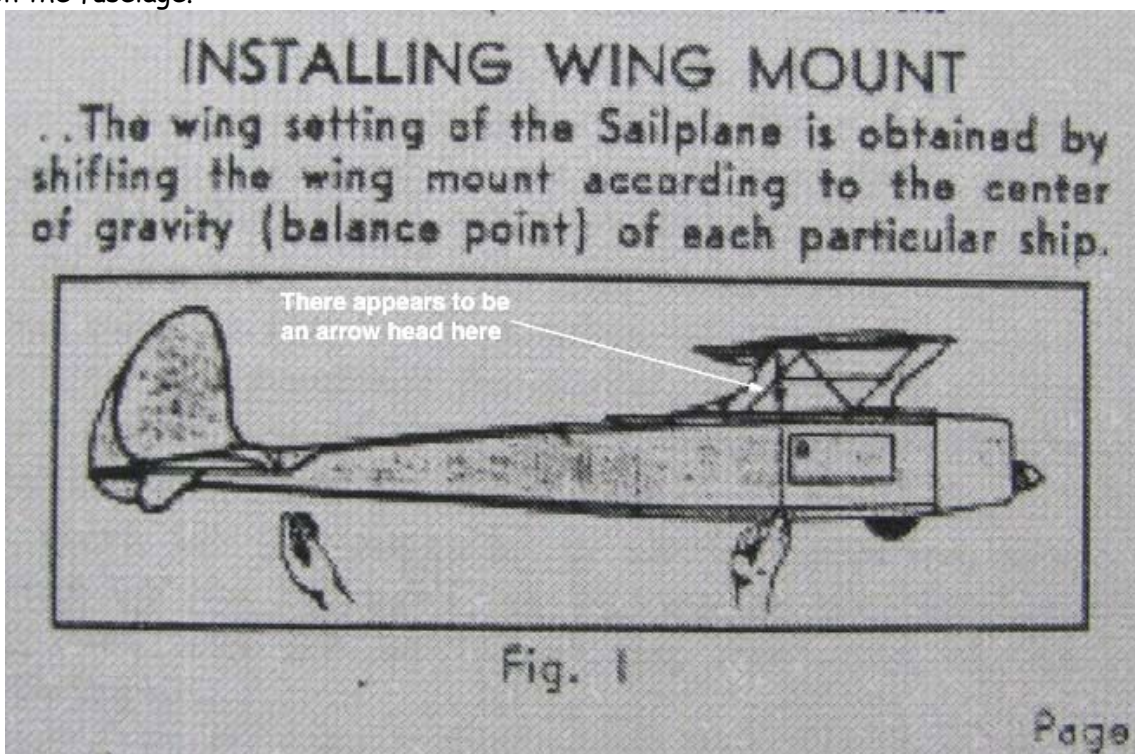
On the Sailplane plans, there is an instructional note shown below telling the builder to read the instructions booklet before gluing the pylon to the fuselage.



Some time ago, Gene Wallock sent me the .pdf file containing the pages of the Sailplane booklet. In the instruction picture below, it says to shift the pylon until the arrow on Rib M7 is directly above the C.G. To begin with, Rib M7 isn't even glued on yet and there is no arrow on Rib M7 or on the pylon plan anywhere?

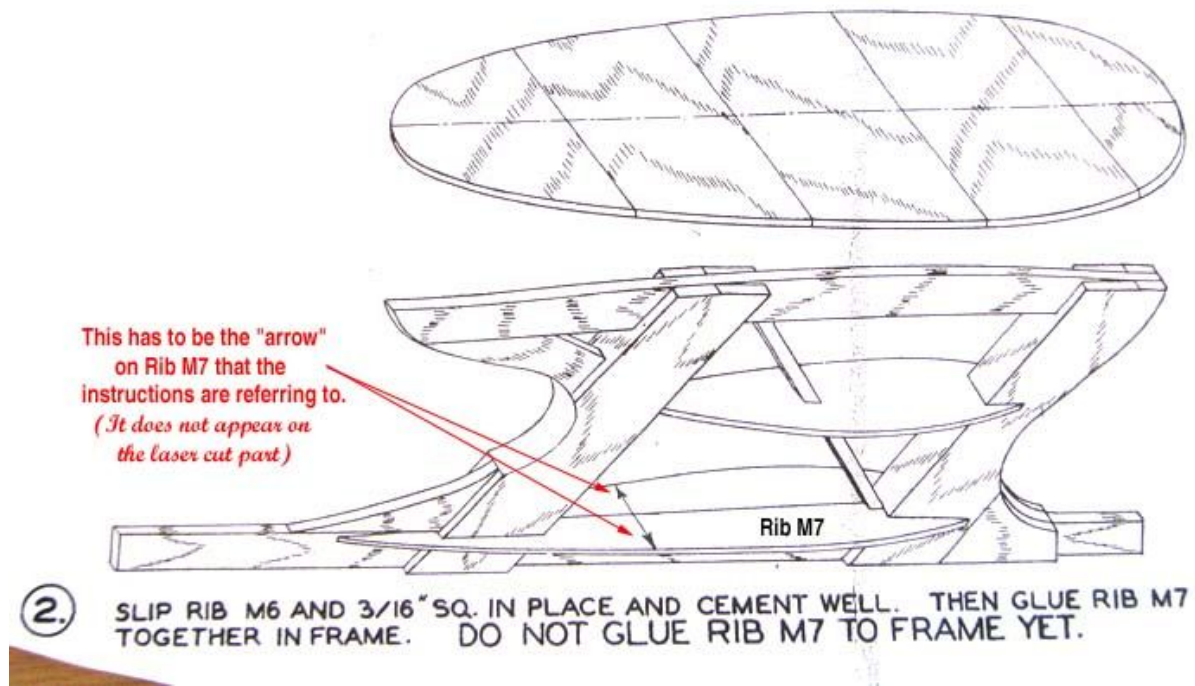
First, attach the tail assembly (covered and doped), the ignition system, engine, propeller, etc., onto the fuselage, which has been covered on three sides. Place wing mount on the fuselage, and shift until arrow on Rib M7 is directly above center of gravity. The C. of G., or balance point is determined by balancing model with thumb and forefinger on the lower longerons as shown in Fig. 1.

In the booklet's Fig. 1 shown below, there appears to be an arrow head pointing down on the vertical line over the right hand, but so what? I need to know where on the pylon frame to locate the C.G. before I can locate the pylon on the fuselage.



In discussions with Jim O'Reilly, he made the following observation:

"I have a copy of the original plans plus the instruction booklet, as you do. It didn't make any sense to me either, until I noticed the isometric view labeled No. 2, just above the back of the pylon in the side view. If you look at ribs M7 in that isometric view, you will see a pair of arrows that have no apparent purpose. I suspect that they were actually printed onto the original print wood, and that this is your original reference point for locating the CG relative to the wing." To visualize what pair of arrows jim is talking about I scanned in the isometric view labeled No. 2 for all to see below. Please note that this represents the balance point without the wing and not the C.G. for the complete model including the wing!

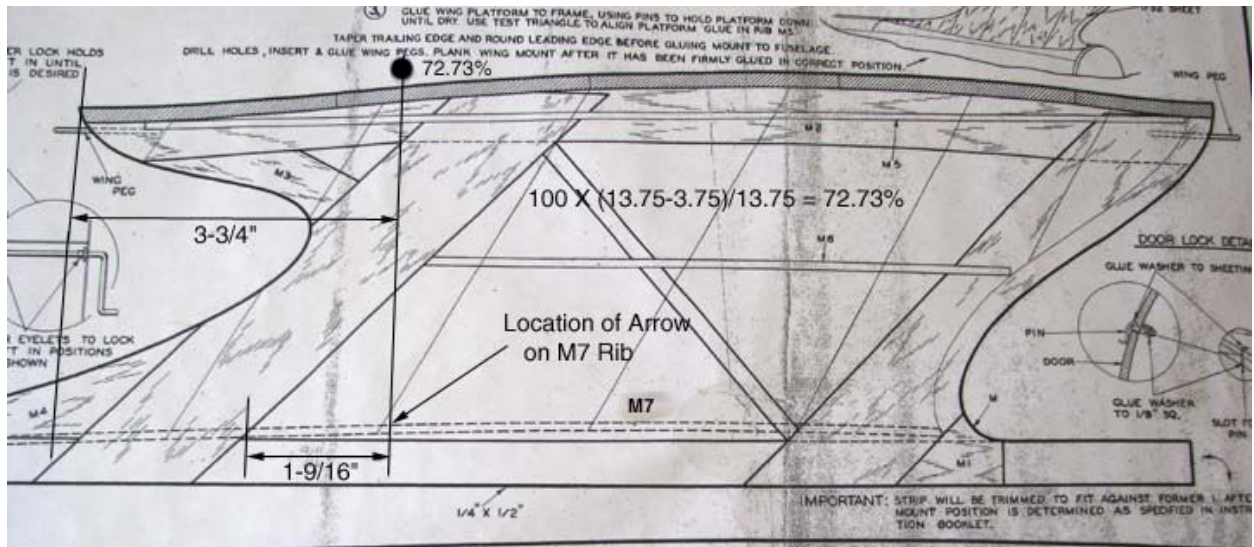


This morning, Alfredo sent me this suggestion: The ideal solution should be to take a look at a pristine Comet Model Airplane & Supply Sailplane kit. If my memory do not fail, I recall that Gerald Martin had a virginal kit with all the pieces in the original Comet box, so he could be the man to be consulted about the exact arrows position printed on M7 split rib ...

I contacted Gerald as follows: If you do in fact have the Comet kit, please measure the position of the arrow on Rib M7 e-mail it to me. He measured the location of the arrow on the M7 printed wood and sent me his measurement of 1-9/16" as shown below.



Transferring Gerald's measurement to the pylon plan, you can then determine the distance from the pylon's trailing edge to the *Wing Off C.G.* as 3-3/4" as shown below. This places the *Wing Off C.G.* at 72.73% measured from the forward edge of the pylon.



The *Wing On* or complete model C.G. is one other important piece of information I got from Steve Rozelle. Since he flies the Comet Sailplane, I contacted him to see where his model balanced. Steve responded as follows:

Tandy,

My balance mark is between 5 and 5.5 inches forward from the Sailplane's TE. See pic Steve



So Steve complete model, including the wing, balances at 5-1/8". This 62.73% of the Sailplane's wing's 13-3/4" root chord. In addition, Steve sent me a distance of 2.5" from his firewall to the forward edge of the pylon as shown below.



To summarize the key results, I present the following:

1. The arrow on the original printed wood that is referred to in the Sailplane instruction booklet is located 1-9/16" forward of the rear notch on the M7 rib.
2. To locate the pylon structure relative to the fuselage structure, a point 3-3/4" from the aft edge of the pylon is positioned over the model's *Wing Off* balance point. This is equivalent to a *Wing Off* balance point of 72.73% of the wing's root chord.
3. There is an Edco powered R/C assist Comet Sailplane flying with its balance point at 62.73% of the wing's root chord.

.....Tandy